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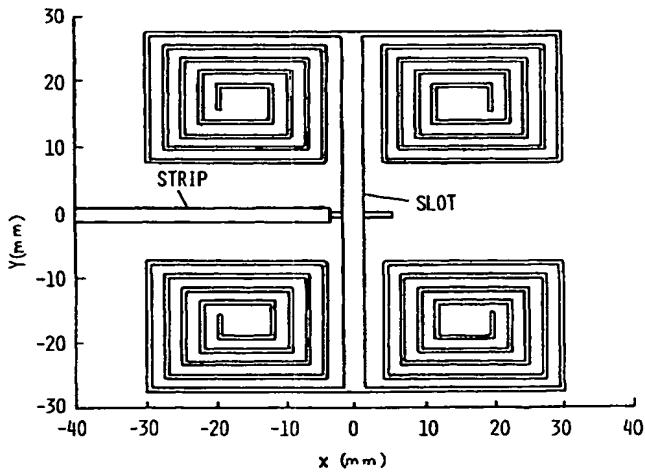
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WO 03/094293 A1

(57) Abstract: The present invention disclosed design aspects and the measured results of a miniaturized resonant narrow slot antenna. The resonant narrow slot radiating elements have a planar geometry and are capable of transmitting vertical polarization when placed nearly horizontal. A resonant narrow slot antenna according to the present invention simplifies impedance matching. Slot dipoles can be excited by a microstrip line and can be matched to arbitrary line impedances by moving the feed point along the slot. Antenna miniaturization can be achieved by using a high permittivity or permeability substrate and superstrate materials and/or using an appropriate antenna topology. Miniaturization is achieved through providing a unique geometry for a resonant narrow slot antenna. A very efficient radiating element is provided. With the virtual enforcement of the required boundary condition at the end of a slot antenna, the area occupied by the resonant antenna can be reduced. To achieve the required virtual boundary conditions, the two short-circuit at the end of resonant slot are replaced by some reactive boundary conditions, including inductive or capacitive boundary conditions, including inductive or capacitive loadings.